

CLAIMS

What is claimed are:

5 1. A method of manufacturing a flash memory device, comprising the steps of:

 sequentially forming a tunnel oxide film and a first polysilicon film on a semiconductor substrate and then etching said first polysilicon film and a given region of said tunnel oxide film;

10 forming a lower oxide film on the entire structure;

 performing a nitrification process to form a nitrogen layer below said lower oxide film;

 performing an annealing process using an oxygen gas so that said nitrogen layer is moved on the surface of said lower oxide film, thus forming a
15 nitride film;

 forming a upper oxide film on the entire surface to form a dielectric film consisting of said lower oxide film, said nitride film and said upper oxide film;

 sequentially forming a second polysilicon film, a tungsten silicide film
20 and an anti-reflection film on the entire structure; and

 patterning said anti-reflection film, said tungsten silicide film, said second polysilicon film and said dielectric film to form a control gate, and then patterning said first polysilicon film and said tunnel oxide film to form a floating gate.

2. The method of manufacturing a flash memory device according to claim 1, wherein said lower oxide film is formed using DCS gas and N₂O or NO gas at the temperature of 810 ~ 850°C.

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3. The method of manufacturing a flash memory device according to claim 1, wherein said lower oxide film is formed in thickness of 35 ~ 100 Å at the deposition rate of 4 ~ 10 Å/min.

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4. The method of manufacturing a flash memory device according to claim 1, wherein said nitrification process is performed by introducing N₂O or NO of 1 ~ 20ℓ into the furnace at the temperature of 810 ~ 850°C for 10 ~ 20 minutes, thus forming a nitrogen layer of 3 ~ 5 Å in thickness in said lower oxide film.

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5. The method of manufacturing a flash memory device according to claim 1, wherein said annealing process using the oxygen gas is performed by introducing an oxygen gas of 5 ~ 20ℓ into the furnace at the temperature of 850 ~ 950°C for 5 ~ 20 minutes.

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6. The method of manufacturing a flash memory device according to claim 1, wherein said upper oxide film is formed using DCS gas and N₂O or NO gas at the temperature of 810 ~ 850°C.

7. The method of manufacturing a flash memory device according to claim 1, wherein said upper oxide film is formed in thickness of 35 ~ 100 Å at the deposition rate of 4 ~ 10 Å/min.

5 8. The method of manufacturing a flash memory device according to claim 1, wherein said second polysilicon film is formed in a double structure of a doped polysilicon film and an undoped polysilicon film.

9. The method of manufacturing a flash memory device according to claim 8, wherein said polysilicon film and said undoped polysilicon film is deposited at the ratio of 4:1 ~ 7:1.